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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,566	12/30/2003	Gary A. Frazier	004578.1385	8078

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BAKER BOTTS LLP
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EXAMINER

KINKEAD, ARNOLD M

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/748,566

Applicant(s)

FRAZIER, GARY A.

Examiner

Arnold M. Kinkad

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-12 and 16-22 is/are rejected.
- 7) ☒ Claim(s) 5-8 and 13-15 and 23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,3,4,9,10,11,12,16,18,19,20,21, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Geis et al(US 5,825,240).

The reference by Geis et al discloses an apparatus with a distributed RTD(resonant tunnel device) section, see figures 3(repeating unit 202). These repeating units will provide a plurality of inductive portions(see representative circuit equivalent in fig. 14), with inductive element L1; As shown in figure 3, these repeating units are coupled between a source(Vin) and load(R) which are coupled to respective first and second nodes. Between adjacent repeating unit inductors will be a node and a RTD will be connected between that node(3rd node) and ground(see figure 3, RTD(big). These elements are integrated circuit element structures formed by layers, see figures 5a,7, and 8. Note that the transmission line layers and RTD coupled between the first and second nodes as repeating units are the respective first section and elongated second section of the IC layout. The first section having a plurality of different portions(Tseg, forming the inherent inductance) and then the plurality of portions(see fig 5a) forming the RTD device. The repeating units extend from a first location to a second location(see fig. 3). The RTD , second section includes a plurality of layers, see figure 7, first layer (235f), second layer(235e), third layer(235d), fourth

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layer(235c) and a much thicker fifth layer(235a). The second and fourth layers being insulating layers(ALAs type) and first and fifth being highly doped. The third layer being undoped. The use of contacts(210) metallization layer and ground contact(first contact 230 ,see also figure 3, with RTD to ground) extending between the first and second locations. These contacts are placed about the first and fifth layers, see figure 8, with layer 210(second contact) shown clearly and the plurality of layers 235.

The RTD elements are inherently biased for operation as a negative resistance device see col. 1, lines 50-60 and also provide the gain for amp/oscillation. The method steps being inherent.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geis et al .

The reference by Geis et al discloses an apparatus with a distributed RTD(resonant tunnel device) section, see figures 3(repeating unit 202). These repeating units will provide a plurality of inductive portions(see representative circuit equivalent in fig. 14), with inductive element L1; As shown in figure 3, these repeating units are coupled between a source(Vin) and load(R) which are coupled to respective first and second nodes. Between adjacent repeating unit inductors will be a node and a RTD will be connected between that node(3rd node) and ground(see

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figure 3, RTD(big). These elements are integrated circuit element structures formed by layers, see figures 5a,7, and

8. Note that the transmission line layers and RTD coupled between the first and second nodes as repeating units are the respective first section and elongated second section of the IC layout. The first section having a plurality of different portions(Tseg, forming the inherent inductance) and then the plurality of portions(see fig 5a) forming the RTD device. The repeating units extend from a first location to a second location(see fig. 3). The RTD , second section includes a plurality of layers, see figure 7, first layer (235f), second layer(235e), third layer(235d), fourth layer(235c) and a much thicker fifth layer(235a). The second and fourth layers being insulating layers(ALAs type) and first and fifth being highly doped. The third layer being undoped. The use of contacts(210) metallization layer and ground contact(first contact 230 ,see also figure 3, with RTD to ground) extending between the first and second locations. These contacts are placed about the first and fifth layers, see figure 8, with layer 210(second contact) shown clearly and the plurality of layers 235.

The RTD elements are inherently biased for operation as a negative resistance device see col. 1, lines 50-60 and also provide the gain for amp/oscillation. The method steps being inherent.

The reference by Geis et al does not show discrete element construction, however, using lumped elements instead of the integrated circuit structure is conventional and provides an equivalent operation type circuit albeit more bulky.

In light of the above it would have been obvious for one of ordinary skill in the art to have recognized that discrete elements may be used instead of the integrated type I.C. as shown in Geis et al. The use of such equivalent circuit elements to represent the integrated circuit is conventional and functions equivalently.

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Allowable Subject Matter

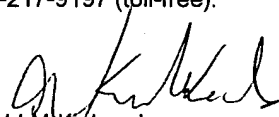
5. Claims 5,6,7,8,13,14,15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The examiner could not find fair suggestion for the particular doping of the third and fifth layers (lightly doped). No impedance matching was suggested as well as the distance between the first and second locations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnold M. Kinkead whose telephone number is 571-272-1763. The examiner can normally be reached on Mon-Fri, 8:30 am -5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on 571-272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Arnold M Kinkead

Primary Examiner

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Arnold Kinkead

May 10, 2005